125KW PCS solution in high power density GWQ package

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Abstract

1 Introduction of 125KW PCS

2 GWQ package solution in 125KW PCS

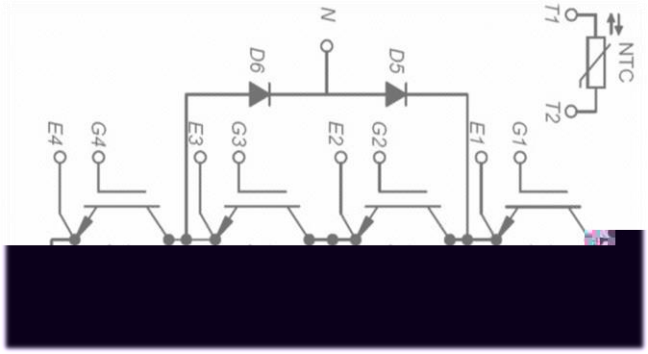

Fig.2 NPC-I topology

2.1 Topology Scheme

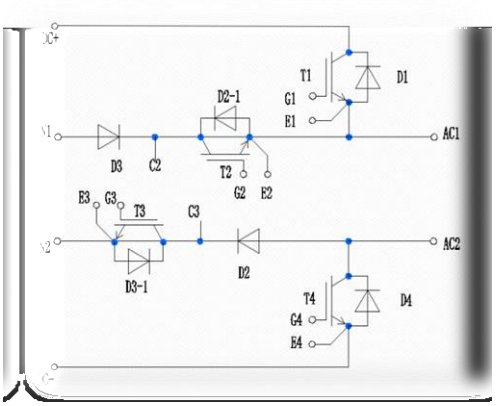

Fig.1 NPC-T topology

Table 1

2.2 Chip scheme

able 2.

Table 2

2.3 Package reliability

Fig. 3 (a) shows the size of the GWQ package. **Fig. 3 (b)** shows the GWQ package 3D diagram

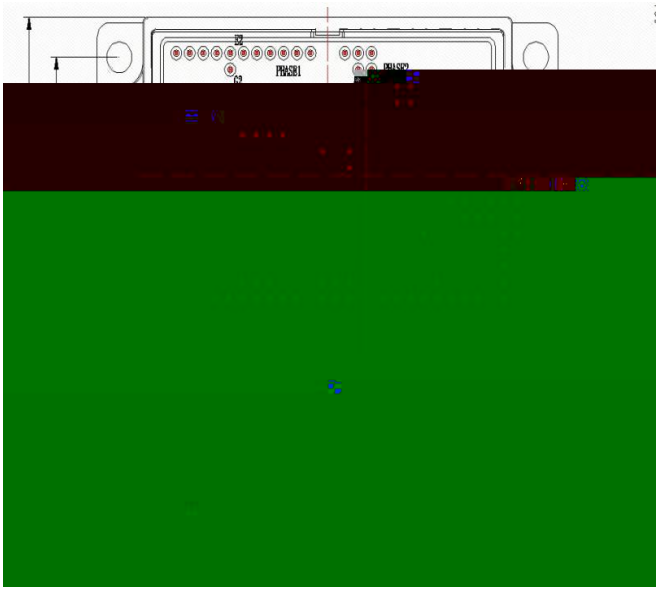

Fig.3 (a) The size of the GWQ package

Fig.3 ( ) The GWQ package 3D diagram

Table 3.

Table 3 Comparison of TC life of modules with and without baseplate

No.	Yes/No BP	Number	Cycle to failure
1	Yes	6	2000
2	No	6	600
3	Yes	6	1800
4	No	6	700

3.2 Hybrid module of SiC MOSFET

Table 5

Table 5

Unit	Number	Specification	Technology
T1/T4	4	14.4mΩ 1200V	/
T2/T3	2	200A 750V	M7U
D1/D4		Body diode	/
D2/D3	2	200A 750V	M7D
D2-1/D3-1	1	75A 1200V	M5D+

Fig 5

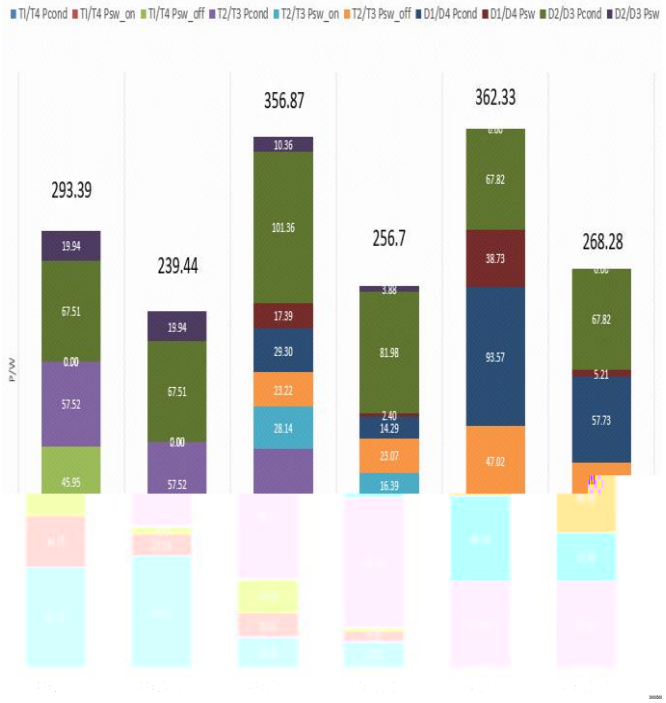

Fig 5 Power loss comparison between SIC MOSFET scheme and SI scheme

3.3 Advantages of third-generation semiconductors

1.

2.

3.